

EDMUND BERGER 2018-12-31

THE VAST AUTOMATON: NOTES ON ALEXEI GASTEV, MARX, AND ANDREW URE

MASHINES ALEXEI GASTEV, AUTOMATION, INDUSTRIAL MODERNITY, MACHINES, MARX, MARXISM, POSTFORDISM, URE

In 1916 his poem *Express: A Siberian Fantasy*, Alexei Gastev depicts a journey, undertaken by a high-speed passenger train, across a vast wasteland that has been transformed by the pulsing tumult of industrial modernity. The vision is one of an open future, characterized by the tearing away of the parochial and the old: where there was once empty wilderness, now there are gardens, and where rural backwardness reigned supreme, connections of all sorts proliferate. Cascading networks of electrical systems, towns, roads, railways, and man-made rivers pierce the once-pristine wilderness and draw themselves as the circuits linking great automated factories. Roaring across this landscape at a quickening pace, not even able to stop in order to offload passengers (train cars are simply detached and rolled off onto parallel tracks when destinations come into view), the great train is moving eastward; shrinking behind it is the Old World of Europe, land of decrepit aristocracies and worn out traditions, and coming into view just ahead is the New World, just through a tunnel that passes deep beneath the Bering Strait. "[T]he motors are breathing fast and rumbling, pumping the air, and the tunnel is shaking like a steel pulse in the sleeping waters of the ocean. One half hour—and America".

The situation depicted in *Express* is, as Charles Rougle describes, "a vision of the world on the threshold of a great revolutionary cataclysm". With the real events of the October Revolution still a year out, the near-utopia of the poem was still that of a world dominated by capitalism, albeit one that was in the process of shedding its most regressive features. The anarchy of the market, where firms small and large collided freely in combat, was coming under the sway of great industrial monopolies led by faceless collectives. This is the importance of the ultimate collision of the train—itsself perhaps a symbol of the revolutionary agency itself—with America, which in contrast with Old Europe was seen as a laboratory where the cutting-edge of techno-industrial tools and techniques were being forged. There is thus, already at this early of a stage, a foreshadow of Stalin's comments, laid down in 1924, that the essence of Leninism consisted of the marriage of the "Russian revolutionary sweep" with "American efficiency".

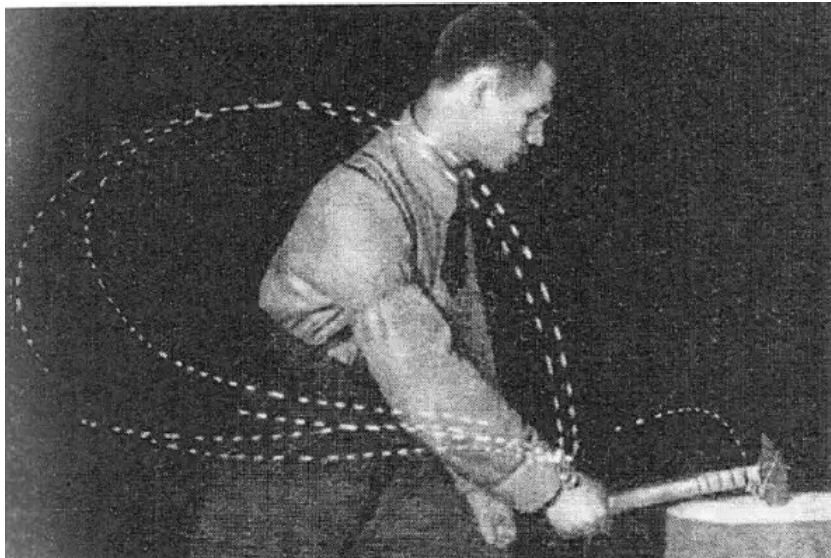
Indeed, Gastev would play an essential role in promoting this particular synthesis at his Central Institute of Labor (or, as it was more formally known: the Institute for the Scientific Organization of Work and the Mechanization of Man), opened in Moscow in 1920 with the personal support of—and funding arranged by—Lenin. Echoing Georges Sorel's distinction between the 'ethics of

consumers' and the ethics of 'producers' (the latter of which corresponded, appropriately, to the proletariat), Gastev had described mass society as being the battleground between "two demons", one aligned with consumption and the other production. Revolution entailed a pact: "We are definitely on the side of the second. And our task is to infect these masses with by every possible proof with an unquenchable passion for effort, labour, energy"

[quoted in Kendall Bailes, 'Alexei Gastev and the Soviet Controversy over Taylorism']

. It was an uphill struggle, as Gastev had to work hand-in-hand with the dominant union system to convince the workers to submit themselves to time-motion studies in order to optimize their movements during the process of industrial production (a goal which could not, of course, be realized, as Gastev's less *mechanistic* successors came to realize), which would have the correlated effect of speeding-up work. The horizon of this great work was to be, ultimately, the *automatic factory*, as he described in a 1919 article for *Proletarskaya kul'tura* (the official organ of the Proletkult movement, of which he was part):

Before us there is the prospect not only of an individual mechanized worker but of a mechanized system of labour management. Not a person, not an authority, but a "type"-a group-will manage other "types" or groups. Or even a machine, in the literal sense of the word, will manage living people. Machines from being managed will become managers.'



It is for this reason that Gastev is best remembered as a Soviet Frederick Winslow Taylor. Lenin himself had declared in 1918 that embracing Taylorist scientific management was vital in developing the productive forces, describing it in 'The Immediate Tasks of the Soviet Government' as "the last word of capitalism" and "a combination of the refined brutality of bourgeois exploitation and a number of the greatest scientific achievements". He continued:

The Soviet Republic must at all costs adopt all that is valuable in the achievements of science and technology in this field. The possibility of building socialism depends exactly upon our success in combining the Soviet power and the Soviet organisation of administration with the up-to-date achievements of capitalism. We must organise in Russia the study and teaching of the Taylor system and systematically try it out and adapt it to our own ends.

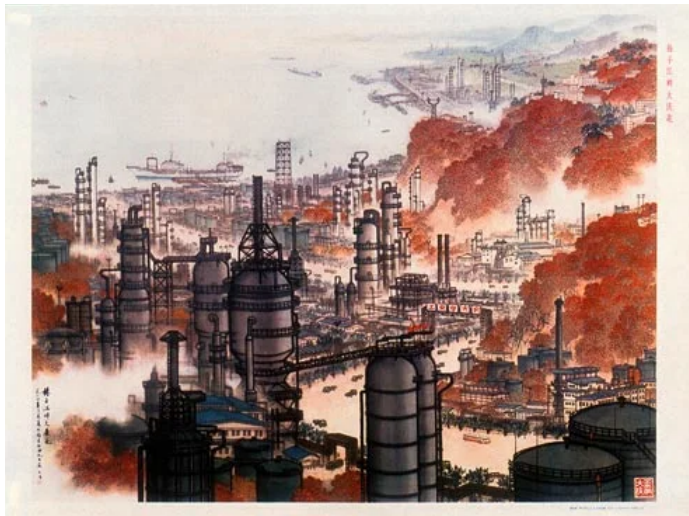
What Gastev sought to develop and deploy through his work at the Central Institute could not, however, be reduced to the simple goals pursued by the Taylorists. "Communism is Soviet power plus the electrification of the whole country" was the dictum put forth by Lenin during the Eighth All-Russia Congress of Soviets. The higher stage of production could only be realized when the symptoms of underdevelopment and reactionary consciousness—small-scale production, the individual proprietor, the shysters and deal-makers, etc—were swept away by the advance of large-scale, industrial production, and it was precisely electrification that served as the necessary precondition for this evolution: "Only when the country has been electrified, and industry, agriculture and transport have been placed on the technical basis of modern large-scale industry, only then shall we be fully victorious". What this meant, for Gastev, was nothing less than the production of a *new type of person*, a realization of a New Soviet Man appropriate to this convulsive, energetic epoch. "Electrification is the highest expression of machinism", he wrote in *How to Work*. "This is not one machine, this is not a complex of machines, it is not even a machine-factory, not a machine-city, it is a machine-state, and when it is international, it is in the full sense of a mechanized globe... And, of course, in unison with this new machine worldview, you need to take a fresh look at the person".

The new person would be a "man-assembler, who is full of ideas of treatments, technical tuning and adaptations". Taylor's scientific management sought to bring the human laborer into alignment with the operations of the machine, but for Gastev this was but only the first step. *Everything* was to be optimized in conjunction with the machine, including creativity and the drive to innovation itself. And once these powers were cracked open, penetrated by the radiant light of techno-science and their inner logic demystified, those tropes so hallowed by the capitalist bourgeoisie—individual creativity and the innovative entrepreneur—would fall away. They would be universal, anonymous, and collective, no different or separate from the universal, anonymous, and collective industrial system that was taking shape. Gastev:

We must deal with the energy of the human mechanism. In this century, when there are chronoscopes showing ten thousandths of a second, when there are ammeters and voltmeters, we will have to "measure" human energy. The science of nutrition of a working organism must be as exact a science as thermal sciences, like the science of nutrition of the steam engine, the nutrition of the electric motor; the consumption of human energy must be instrumentally measured to the thousandths of a small calorie, and the regulation of the work of the human body must be built on a system of carburetors feeding heat engines. There should be nothing sacred here. There must be a complete revolution. In this area, we need the same revolutionary appeal for scientific biologists, which the authorities have done in relation to engineers and economists in the electrification issue.

While there was a close relationship between Gastev's thought and that of the Soviet leadership—despite his status as an outsider to the party, having distanced himself during a period of forced exile that resulted from his activities in the 1905 revolution—his promotion of scientific management and *biomechanics* triggered an opposition that congealed into an organization with a simple, but effective, name: the "Group of Communists". In many respects, the Group's opposition to Gastev and the activities of the Central Institute of Labor was that they fell *short* of the lofty goals that they had set for themselves, and that commitment to a Taylorist base prevented the realization of this higher stage of industrial culture. As Bailes summarizes, "The use of the stop watch as the sole means of determining work norms was an especially exploitative and uncritical application of Taylorism to Soviet industry. The most important problem of Soviet industry was to raise productivity without increased intensification of labour, and to raise wages in proportion to increased productivity". What was desired was a means to scientifically manage production, and to increase the process of its processes and the volume of its output, without the influence Taylor—but in the end, the opponents gradually conceded. "Taylorism could not be rejected per se, [they] affirmed; the most 'useful' parts of the system, as Lenin had pointed out, must be tested and selected in practice".

Decades later, Autonomous Marxists like Paolo Virno and Carlo Vercellone argued that the 'phase' of capitalist development that had come into being in the first half of the 20th century, characterized by the gradual evolution from Taylorism to Fordism to what we might describe as *international Fordism*, had been anticipated by Marx in the *Grundrisse*, and particularly within the pages of the 'Fragment on Machines' [for an overview of Virno and Vercellone's argument, see Tony Smith's essay "The 'General Intellect' in the *Grundrisse* and Beyond", in the book *In Marx's Laboratory: Critical Interpretations of the Grundrisse*]. Marx, in an uncanny foreshadow of the Taylorist moment and semi-automation, had situated the worker as becoming suspended between machinic systems, stripped of their individuality and their autonomy with regard to the production processes. This same movement was fundamentally connected to increasing technoscientific knowledge, which emerges from the drives of production and innovation, and then feeds back into it to push this great apparatus into higher orders. This knowledge becomes socialized, diffused, and universal in its application—a general intellect. It is in this stage interzone that Marx's vision of post-capitalism emerges: the worker ceases to be an autonomous agent piloting production from within, but becomes a manager of that system. "Labour no longer appears so much to be included within the production process; rather, the human being comes to relate more as watchman and regulator to the production process itself" (see my earlier post on the question of an 'Eco-Marx' and 'Promethean Marx' for more on this).



Gastev offered a similar assessment in *How to Work*, paralleling Marx's concept of the General Intellect by describing the way in which the rapid innovation of technological systems compelled the further development of scientific knowledge. Swept deliriously by the machine and the stopwatch, Gastev went as far as to suggest the impending merging of the scientist and the engineer, noting how "it was not for nothing that [a] person who attempted to study the movements of an employee turned out to be the engineer Gilbert, and it was not for nothing that such a biologist who studied human labor movements, like Professor Sechenov, previously graduated from an engineering school. The development of modern technology pushes and transforms biology, it gives the formulation of these problems and forces biology to think so". The engineer, here, is both a master of techniques and a product of them, and the recasting of all scientific professions in the model of the engineer comes from the deepening penetration of industrial modernity in every discipline, in every endeavor, in every facet of life. To flesh this out further, Gastev turns at last to Marx himself, citing from the first volume of *Capital* passages that illuminate the way in which individualized, independent 'subjective character' is leveled by a collective and cooperative "purely technological principle". Speaking of large-scale production, Marx had written that the "whole process is decomposed here objectively, depending on its own nature, into its constituent phases, and the problem of performing each partial process and connecting various partial processes is resolved through the application of mechanics, chemistry, etc".

Gastev praises Marx for his "amazing erudition" in drawing on a now-largely forgotten source: Dr. Andrew Ure and his 1835 book *The Philosophy of Manufacturers*. Described by Marx twice, one in the first volume of *Capital* and once in the third, as the "Pindar" of large-scale production, Ure's influence radiates through Marx's passages on the nature of industrial systems, stretching from his early critique of Proudhon in *The Poverty of Philosophy* to his late-stage works. It might seem curious that Ure, a consistent opponent of efforts to alleviate the conditions of the proletariat—and whose work Marx himself described as 'naïve' in its ceaseless ability to "blurt out the thoughtless contradictions of the capitalist brain" [*Capital Volume 1*, p. 564]—would be so influential. Nonetheless, *The Philosophy of Manufacturers* was, for Marx, the "classical expression of the spirit of the factory", and the reason for this was that Ure glimpsed the strange horizon that was being inexorably pulled towards:

Manufacture is a word, which, in the vicissitude of language, has come to signify the the reverse of its intrinsic meaning, for it now denotes every extensive product of art, which is made by machinery, with little or no aid of the human hand; so that the most perfect manufacture is that which dispenses entirely with manual labor. The philosophy of manufacturers is therefore an exposition of the general principles, on which productive industry should be conducted by self-acting machines. [The Philosophy of Manufacturers, p. 1]

The tendency of industrialization, in other words, was that of the progressive elimination of the human as an element in production. Ure breathlessly described the "sagacity" of the industrial giant Richard Arkwright, who had played a role in the invention of the spinning frame (and the immensely profitable organization of production that followed in its wake), for perceiving the outlines of a future world characterized by a "vastly productive human industry". No longer a subordinate to the limitations of "muscular effort", the output of these combines would be "the work of mechanical fingers and arms, regularly impelled with great velocity by some indefatigable physical power" [p. 14-15]. Elsewhere, Ure defined the "factory system" not in terms of a distinct plant or industrial site, but as "the combined operation of many orders of work-people, adult and young, in tending with assiduous skill a series of productive machines continuously impelled by a central power" [p. 13]. For Steve Edwards, these sorts of descriptions are a "revelry", marking the "the closest capitalist thought has ever managed to a fully Dionysian moment". Yet if Ure is intoxicated by the churn of capitalistic processes, it is hardly from the classical image of the commercial giant or by the mad-dash of the market; it is the machinic processes themselves that give rise to this Dionysian moment. Arkwright is not praised for bringing massified industry into being, but for understanding where it was going. Likewise, the "central power" that puts in motion the "work-people" and their "productive machines" is neither capitalist nor capital—it is thermodynamic power, heat converted into mutable energy.



If the capitalist is rather unimportant except in its most abstract role, labor, likewise, is only important insofar as it disappears. Class struggle is for Ure a means to the ends of this disappearance, with the threat of the strike—or the event of the strike itself—serving as an impetus for the automation of functions previously served by the proletarian. “...surely science, at the call of capital, will defeat every unjustifiable union which labourers may form”. In many respects, Ure here anticipates the arguments of both Sorel and the Autonomists, particularly that of Mario Tronti. For the former, the cessation of the class struggle through the alignment of reformist ‘parliamentary socialists’ and the ‘humanitarian-minded bourgeoisie’ stalled out industrial development, a situation that he described as “decadence”. For the latter, the class struggle comes to unfold in cycles, characterized by the dialectic of proletarian offensive and the bourgeois response, which is to recalibrate the production process through the introduction of new technological systems and organizational paradigms. This argument arises in particular from a close reading of Marx’s chapters on the working day in the first volume of *Capital*, which illustrate quite clearly how the struggle to shorten the length of daily labor led to the introduction of machinery that intensified both the pace and the output of production—an analysis that was no doubt influenced by Ure’s own studies.

While labor gets squeezed out of the production process, it does not, Ure argued, disappear in full:

The principle of the factory.. is to substitute mechanical science for hand skill, and the partition of a process into its essential constituents, for the division or graduation of labour among artisans. One the handicraft plan, labour more or less skilled, was usually the most expensive element of production—Materiam superabat opus; but on the automatic plan, skilled labour gets progressively superseded, and will, eventually, be replaced by mere overlookers of machines [The Philosophy of Manufacturers, p. 20].

This language immediately recalls that of “Fragment on Machines”, with its depictions of future labor as the overseers of industrial-scientific processes—and indeed, the spirit of Ure’s Dionysian moment hovers above the pages of the Fragment. At the conclusion of the section just prior to the Fragment, Marx offers a lengthy citation from *The Philosophy of Manufacturers* that culminates in the following: “In its most rigorous sense, this term

[factory]

conveys the idea of a vast automaton, composed of numerous *mechanical and intellectual organs* operating in concert and without interruption, towards one and the same aim, all these organs being subordinated to a motive force which moves itself” [*The Philosophy of Manufacturers*, p. 13; cited in *Grundrisse*, p. 690, emphasis Marx’s]. Compare this quotation with the most famous passage from the Fragment, which appears but a page later:

...once adopted into the production process of capital, the means of labour pass through different metamorphoses, whose culmination is the machine, or rather, an automatic system of machinery (system of machinery: the automatic one is merely its most complete, most adequate form, and alone transforms machinery into a system), set in motion by an automaton, a moving power that moves itself; this automaton consisting of numerous mechanical and intellectual organs, so that the workers themselves are cast merely as its conscious linkages [Grundrisse, p. 690].

Much of this is a paraphrase of Ure, particularly concerning the self-movement of the automaton, set in motion by some motive force—but it is of particular interest that he is cited word for word in the description of “numerous mechanical and intellectual organs”. It is clear of the immense importance of this idiosyncratic conceptualization of the factory to Marx, and it would be a mistake to consider its vital role as diminishing in the passage from the notebooks that compose the *Grundrisse* to the final drafts of *Capital*. In the fifteenth chapter of *Capital Volume I*, Marx deploys a distinction between the tool and the machine by describing the latter as a “mechanism that, after being set in motion, performs with its tools the same operations as the worker

did with similar tools [*Capital Volume 1*, p. 495]. Later in the same chapter, in the section dedicated to examining the factory system proper, Marx begins by offering once again the aforementioned quote from *The Philosophy of Manufacturers*, before discerning—in language drawn directly from the Fragment in the *Grundrisse*—a Janus-faced position embedded in Ure's description. Noting a disjunction between the characterization of the factory system as the organization of massified labor and as something driven by a 'central motive force', Marx writes:

*These two descriptions are far from being identical. In one, the combined collective worker appears as the dominant subject, and the mechanical automaton as the object; in the other, the automaton itself is the subject, and the workers are merely conscious organs, coordinated with the unconscious organs of the automaton, and together with the latter subordinated to the central moving force. The first description is applicable to every possible employment of machinery on a large scale, the second is characteristic of its use by capital, and therefore of the modern factory system [*Capital, Volume 1*, p. 544-545].*

Thus the depiction of labor from the *Grundrisse*, as ensnared within the gears of fearsome and inhuman machinery, is retained, as it captures the reality of production under capital, that is, under the regulation of the law of value. Insofar this situation tends towards the autonomization of production, the increased centrality of technoscientific development, the lessening dependency on direct labor, and the opening up of free time as a historical force unto itself, it is a progressive development—but it is here that the real contradiction in Ure's thought moves to the fore. Consider the following, drawn from the twenty-third chapter of *Capital Volume 3*, which resumes in brief the sketch of communism put forth in the Fragment:

It has already been remarked by Mr. Ure that it is not the industrial capitalists, but the industrial managers who are "the soul of our industrial system."

The capitalist mode of production has brought matters to a point where the work of supervision, entirely divorced from the ownership of capital, is always readily obtainable. It has, therefore, come to be useless for the capitalist to perform it himself. An orchestra conductor need not own the instruments of his orchestra, nor is it within the scope of his duties as conductor to have anything to do with the "wages" of the other musicians. Co-operative factories furnish proof that the capitalist has become no less redundant as a functionary in production as he himself, looking down from his high perch, finds the big landowner redundant. Inasmuch as the capitalist's work does not originate in the purely capitalistic process of production, and hence does not cease on its own when capital ceases; inasmuch as it does not confine itself solely to the function of exploiting the labour of others; inasmuch as it therefore originates from the social form of the labour-process, from combination and co-operation of many in pursuance of a common result, it is just as independent of capital as that form itself as soon as it has burst its capitalistic shell. To say that this labour is necessary as capitalistic labour, or as a function of the capitalist, only means that the vulgus is unable to conceive the forms developed in the lap of capitalist production, separate and free from their antithetical capitalist character.

Both Ure and Marx conceive of the destiny of the development of the productive forces to be the *automatic factory*, watched over and steered by humans freed from the bondage of labor—yet there is a critical different, in that Ure sees this as the reality of capitalism itself, whereas for Marx this exists beyond domination by capital. The capitalist may be rendered redundant by the rise of the industrial manager, but this redundancy does not in anyway imply the elimination of the capitalist as a figure who persists as something glued, apparently permanently, to the side of production. This is because the law of value itself persists: capital may tend towards autonomization in lockstep with industrial automation, but because it remains structurally wedded to the labor of humans, this status cannot be automatically transcended. The progressive and regressive forces put in motion by this development come to lock into an infernal, self-reinforcing circuit that constantly unleashes this beyond, while always pulling it back lest these energetic torrents overflow the present conditions.

Conrad Bongard Hamilton, in an essay that covers much of the same ground as here, argues that Marx, under the influence of Ure, comes to give a new articulation of the proletarian revolution, and it is this particular conception that illuminates a way out from this seemingly impossible impasse. Taking cue from Marx's argument (put forth in both Notebook VII of the *Grundrisse*—tellingly, the section that immediately follows the Fragment on Machines—and in the chapter 15 of *Capital Volume 1*) that communist society will be more appropriate for the application of large-scale machinery than capitalism, Hamilton urges a recognition of "the inevitability—and even desirability— of machinic agents as founding partners in a new society". The proletariat is in the position to abolish the value-form, to break the imperceptible laws that regulate this society and block the emergence of the next—but it is also these same 'machinic agents' that appear as the ruination of the capitalist class by putting into motion the tendency of the rate of profit to fall. That this tendency is indistinguishable from increasing automation, and thus of the necessary conditions for the higher stage of production, illustrates how intertwined these forces are within the pages of Marx's theory. It also illustrates the way in which Ure remains, despite all his foresight, within the confines of the bourgeois ideology.

When Gastev wrote that "[e]lectricity, electrical engineering, electrical industry" was the "most advanced industrial force" that "fatally requires a new person", he was describing precisely a proletarian that was aligned with the machine. The paradox of his position was that this alliance was taken up in the *wake* of a revolution, and not prior to it, and it is within that paradoxical space that his enthusiasm for scientific management techniques, hatched in the laboratories of bourgeois ideologues in faraway America, must be understood. There are, of course, limitations to these thoughts, separated as we are by a near-century of events, many of them profoundly counter-revolutionary in character, others progressive in that they have advanced the scope and

scale of productive capacity (consider the historical irony highlighted by Peter Drucker, that yesteryear's Taylorism was the skeletal base for contemporary industrial automation). We've passed beyond proto-Fordism to Fordism to post-Fordism and perhaps something beyond, and industrialization has been supplanted by the fangs of de- and post-industrialization. The current moment resembles, more than anything else, a phase of industrial and cultural decadence, as the class struggle is violently ground to dust and any sense of forward progress entropically dissipates into a haze of generality.

Is there a more apt time, then, for a return to the revolutionary enthusiasm and development drive sketched out so briefly here? Not a return in the sense of farcical repetition, but to their spirit: the recognition that history isn't over, and that a higher stage is still yet to come.

taken from here

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